REMARKS

I. Summary of the Examiner's Action

A. Claim Rejections

Claims 1 – 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 5,442,625 to Gitlin *et al.* (hereinafter "the Gitlin patent") in view of United States Patent No. 6,115,608 to Duran *et al.* (hereinafter "the Duran patent").

Claims 10 – 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Gitlin patent in view of the Duran patent as applied to claim 4, and further in view of United States Patent No. 6,603,826 to Cupo *et al.* (hereinafter "the Cupo patent").

Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Gitlin in view of Duran and Cupo as applied to claim 11, and further in view of United States Patent Application Publication No. US 2005/0174978 to Shalvi *et al.*, (hereinafter "the Shalvi application").

These rejections are respectfully disagreed with, and traversed below.

II. Summary of Telephonic Interview Conducted on April 21, 2006

Applicants' Representative thanks Supervisory Patent Examiner Rao and Examiner Sefcheck (the Examiner of Record) for the courtesy accorded Applicants' Representative during the Telephonic Interview conducted on April 21, 2006.

During the Interview, Applicants' Representative reiterated Applicants' position that a method comprising steps of "defining the system as a combined Code Division Multiple Access CDMA and Frequency Division Multiple Access FDMA system and using a variable bandwidth waveform with multiple bonded transmitters and receivers that are each agile in both frequency and code" as recited in claim 1 encompasses a system where channel bonding occurs across both code space and frequency space and would be interpreted as such by one of ordinary skill in the art.

In addition, Applicants' Representative repeated that none of the art of record, whether taken singly or in combination, either describes or suggests the subject matter of the claims at issue. In particular, the Gitlin reference, at best, only describes a system where channel bonding occurs across code channels, and the Duran reference, although suggesting that a system can be operated in a hybrid mode with CDMA, TDMA and FDMA aspects, provides no detail on how such a system would implemented. Since Applicants' claims are directed to details of how a combined CDMA and FDMA system would operate, it is not seen how the Gitlin reference, which Examiner admits does not

disclose a combined CDMA and FDMA system, and the Duran reference, which is devoid of implementation detail, can disclose the substance of the claims at issue.

In spite of the best efforts of Applicants' Representative, the Examiners participating in the Interview were not persuaded and no agreement was reached.

With all due respect, Applicants' Representative believes that the Examiner of Record still has not advanced rejections that meet each and every claim limitation of the claims at issue.

For example, the Examiner of Record did not consider Applicants' arguments set forth on pages 13 – 14 of Applicants' March 24, 2006 Response. In particular, claim 3 recited "wherein channel bonding across both code space and frequency space enables the system to operate in at least one of a variable, contiguous or non-contiguous bandwidth at a finely variable rate." Applicants reproduced the only subject matter ever relied upon in writing by the Examiner of Record for rejecting this claim (surprisingly drawn from the Gitlin reference which the Examiner of Record admits does not disclose a combined CDMA and FDMA system) and asked the Examiner of Record how the subject matter drawn from Gitlin and reproduced in Applicants' March 24, 2006 response disclosed the subject matter of claim 3. It is Applicants' position that one of ordinary skill in the art would conclude that the portion of Gitlin relied upon by the Examiner has nothing to do with "channel bonding across *both* code space *and* frequency space".

Instead of addressing Applicants' argument, it is Applicants' Representative's recollection that the Examiner of Record changed tack and indicated that the Duran reference was relied upon for disclosing the subject matter of claim 3. This is not supported by the record as Examiner's own rejection set forth on page 4 of the January 5, 2006 Office Action (and the identical rejection set forth on page 4 of the preceding August 17, 2005 Office Action) only mentions subject matter drawn from the Gitlin reference. In addition, during the Interview Applicants' Representative reminded the Examiner that the Duran reference was relied upon for teaching that a communication system could be operated as a hybrid combining CDMA, FDMA and TDMA aspects, but it did not describe how such a system would be implemented. Further, the Duran reference was not even concerned with implementing hybrid communications systems *per se*, but instead was concerned with handoff procedures between neighboring cells in a cellular communications system, where the neighboring cells operate in different signal formats.

As explained, Applicants' invention simply is not concerned with handoff procedures, so it was not seen what relevance Duran had other than the relatively narrow relevance that a communication system could be operated as a CDMA, FDMA, TDMA hybrid. It is relatively narrow because the issues at hand concern how a hybrid system is implemented, not just that a hybrid system is conceivable.

In view of this, Applicants' Representative was surprised when the rejection of claim 3 was not withdrawn. Persisting in the rejection is not logical. Claim 3 is directed to subject matter that is made possible by operating a communication system as a combined CDMA and FDMA system. In rejecting the claim, Examiner relied upon material drawn from the primary reference (Gitlin) which the Examiner admitted did *not* disclose a combined CDMA and FDMA system. How can the primary reference (Gitlin) teach subject matter that results from operating a system as a combined CDMA and FDMA system when (1) it does not appreciate that this is possible and (2) the secondary reference (Duran) is devoid of implementation detail indicating how Gitlin could be modified?

Nonetheless, in the interest of advancing the prosecution of this case, Applicants have amended the claims.

III. Applicants' Response

A. Rejection of Claims 1 – 9 under 35 U.S.C. § 103(a)

Applicants have amended claim 1, which is reproduced here (emphasis added) as a convenience to the Examiner:

> 1. A method for operating a communication system, comprising steps of:
>
> defining the system as a combined Code Division Multiple Access CDMA and Frequency Division Multiple Access FDMA system, wherein CDMA is used within each FDMA sub-channel, and a plurality of PN code channels are available in each of the FDMA sub-channels;
>
> using at least one base station and a plurality of subscriber stations, where the at least one base station and each of the plurality of subscriber stations have a plurality of frequency agile and PN code agile data modulators and demodulators, and wherein each of the frequency agile and PN code agile data modulators and demodulators can be selectively tuned to separate PN code channels operating within the FDMA sub-channels;
>
> determining current transmission requirements based, at least in part, on operating conditions; and
>
> selecting a number of FDMA sub-channels sufficient to meet current transmission requirements, wherein the system operates as a variable bandwidth system as the number of FDMA sub-channels varies due to transmission requirements.

Support for the amendment is found throughout the application; *see*, for example, page 4, line 26 – page 5, line 4; page 7, lines 3 – 6; page 8, lines 6 – 10; page 8, line 31 – page 9, line 4; page 16, line 20 – page 19, line 17.

Regarding particular subject matter recited in claim 1 such as, for example "wherein CDMA is used within each FDMA sub-channel", support is found at page 4, lines 26 – 28; "a plurality of PN code channels are available in each of the FDMA sub-channels", support is found at page 7, lines 3 – 6; "determining current transmission requirements based, at least in part, on operating conditions", support is found at page page 8, line 31 – page 9, line 4, page 18, line 7 – page 19, line 9; and "selecting a number of FDMA sub-channels sufficient to meet current transmission requirements, wherein the system operates as a variable bandwidth system as the number of FDMA sub-channels varies due to transmission requirements", support is found at page 18, lines 7 – 34.

Accordingly, no new matter has been introduced by these amendments.

Applicants respectfully submit that it is not seen where the emphasized portions of claim 1 are either described or suggested by the art of record, whether taken singly or in combination.

In particular, claim 1 is directed to a mode of operation described at page 18, lines 7 – 29 of the specification (emphasis added):

"Another advantage of adding frequency agility to a PN-code agile modulator 26 and demodulator 34 is that it permits the system to have flexibility in its consumed bandwidth. For example, a system that can operate only with 14 MHz wide channels cannot be used if the bandwidth allocated to the system is only 3.5 MHz. On the other hand, if a system uses CDMA/FDMA with channel bonding, then both the BS 11 and the SSs 10 have a bank of receivers that can each independently be tuned to one of a variety of frequencies, in addition to one of a variety of PN codes. If the bandwidth of any one subchannel is, for example 3.5 MHz, then by tuning some of the modulators and demodulators to each 3.5 MHz slot within a 14 MHz allocation, the bandwidth can be consumed efficiently. Thus a CDMA/FDMA system with four 3.5 MHz subchannels can operate in a 14 MHz channel, but a 14 MHz bandwidth CDMA system can not operate in a 3.5 MHz channel. Furthermore, even though a 10.5 Mhz bandwidth pure CDMA system and a CDMA/FDMA system with three 3.5 MHz subchannels occupy the same bandwidth and provide approximately the same throughput when fully loaded, the CDMA/FDMA hybrid system is far more flexible. For example, if a 14 MHz frequency allocation is divided into four 3.5 MHz subchannels (labeled A, B, C and D) and subchannel C is allocated to another system, then a 10.5 MHz bandwidth pure CDMA system could not operate. In contrast, a CDMA/FDMA system could simply use subchannels A, B and D, leaving subchannel C to other systems. The ability to use non-contiguous subchannels provides operators a unique flexibility that can be very useful when attempting to add a new service to a band of frequency where some of the frequency subchannels have previously been allocated to other systems."

It is not seen where any of the art of record, whether taken singly or in combination, shows any appreciation for this mode of operation. Accordingly claim 1, as amended, is patentable.

Applicants have also amended claim 4, which is reproduced here (emphasis added):

> 4. A synchronous Code Division Multiple Access CDMA and Frequency Division Multiple Access FDMA communications system, comprising:
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> a plurality of FDMA sub-channels, wherein CDMA is used within each of the FDMA sub-channels;
>
> a base site comprising a transmitter for transmitting a waveform and further comprising a plurality of frequency agile and PN code agile data modulators having an output coupled to a radio channel, wherein the transmitter is operable to perform channel bonding in both frequency space and code space by bonding PN code channels from different FDMA sub-channels, forming an effective channel; and
>
> a subscriber unit comprising a receiver for receiving the transmitted waveform from the radio channel and further comprising a plurality of frequency agile and PN code agile data demodulators, wherein the subscriber unit is operable to receive data transmitted in the effective channel formed by bonding PN code channels from different FDMA sub-channels.

Support for claim 4, as amended, is found in, for example, original claim 4; page 4, lines 26 – 28; and page 19, lines 10 – 16.

Claim 4 (as amended) is directed to a mode of operation that is described in part at, for example, page 19, lines 10 – 16 reproduced here (emphasis added):

> "In accordance with these teachings, by bonding N modulators 26 and demodulators 34 together, and multiplexing the data to the modulators 26 and demultiplexing it at the demodulators 34, an effective channel is created that operates with a fine granularity of achievable data rates. Furthermore, the use of N modulators 26 and demodulators 34, which can each run at a unique rate one unique code and a unique frequency subchannel, permits the link to exhibit the characteristics of occupying a flexible channel bandwidth, while providing a great deal of flexibility in setting the rate of the link. The end result is an efficient utilization of the bandwidth resource."

It is not seen where any of the art of record, whether taken singly or in combination, either describes or suggests the subject matter of claim 4 (as amended).

In view of the foregoing remarks and amendments, Applicants respectfully submit that independent claims 1 and 4 are patentable over the art of record, whether taken singly or in combination. Accordingly, Applicants respectfully request that the rejection of claims 1 and 4 be withdrawn. In addition, Applicants respectfully request that dependent claims 1 – 3 and 5 – 9 are patentable both as depending from allowable base claims and for reasons attributable to their independently-recited features.

C. Rejection of Claims 10 – 12 under 35 U.S.C. § 103(a)

Applicants note that claims 10 – 12 depend from an independent claim that is patentable for the foregoing reasons. As a result, Applicants respectfully submit that claims 10 - 12 are also allowable.

D. Rejection of Claim 13 under 35 U.S.C. § 103(a)

Similarly, claim 13 indirectly depends from an independent claim that is patentable for the foregoing reasons. As a result, Applicant respectfully submits that claim 13 is allowable.

E. New Claims

Applicants have added new claims 14 – 19. Independent claim 14 results from the combination of old claims 1 and 3. Applicant respectfully submits that claim 14 and claims 15 and 16, which depend from claim 14, are patentable for the additional reasons cited in the Interview Summary presented herein.

Independent claim 17 is a variant of new claim 14. Applicants respectfully submit that independent claim 17, and claims 18 and 19 which depend from claim 17, are patentable for reasons similar to claims 1, 4 and new claim 14, and for reasons attributable to their independently-recited features.

IV. Conclusion

Applicants submit that in light of the foregoing amendments and remarks the application is now in condition for allowance. Applicants therefore respectfully request that the outstanding rejections be withdrawn and that the case be passed to issuance.

Respectfully submitted,

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Date

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